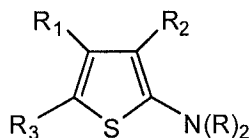


Listing of the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claims 1-3 (canceled)

4. (previously presented) A thiophene monomer of the formula:



wherein:

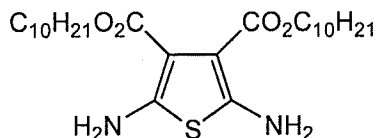
R is selected from the group consisting of H, Me and Et;

R₁ and R₂ are independently selected from the group consisting of H, CN, C₁-C₁₀ alkyl group and CO₂R₄;

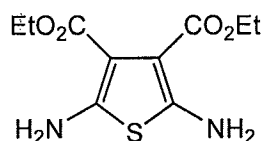
R₃ is selected from the group consisting of NH₂ and CHO; and

R₄ is a C₁-C₁₀ alkyl group.

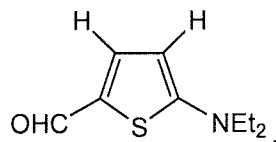
5. (previously presented) The thiophene monomer of claim 4, having the formula:



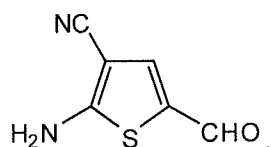
6. (previously presented) The thiophene monomer of claim 4, having the formula:



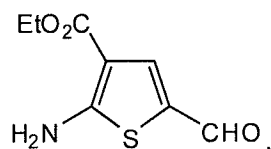
7. (previously presented) The thiophene monomer of claim 4, having the formula:



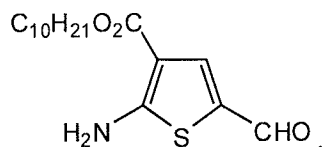
8. (previously presented) The thiophene monomer of claim 4, having the formula:



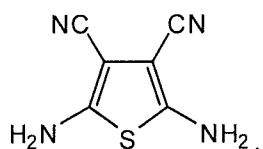
9. (previously presented) The thiophene monomer of claim 4, having the formula:



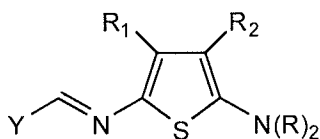
10. (previously presented) The thiophene monomer of claim 4, having the formula:



11. (previously presented) The thiophene monomer of claim 4, having the formula:



12. (previously presented) A dimer of the formula:



wherein:

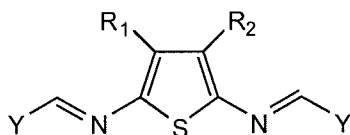
R is selected from the group consisting of H, Me and Et;

R₁ and R₂ are independently selected from the group consisting of H and CO₂R₄;

R₄ is a C₁-C₁₀ alkyl group; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, 1,2,3-triazine, 1,2,4-triazine, 1,3,5-triazine, thiophene, pyrrole, selenophene, tellurophene, 5-nitro-thiophene, 5-diethylamino-thiophene, 5-[2,2']-bithiophene and fluorene.

13. (previously presented) A trimer of the formula:



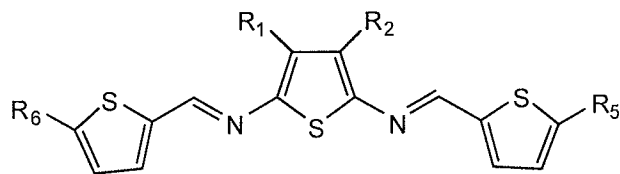
wherein:

R₁ and R₂ are independently selected from the group consisting of H, CN and CO₂R₄;

R₄ is a C₁-C₁₀ alkyl group; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, 1,2,3-triazine, 1,2,4-triazine, 1,3,5-triazine, thiophene, pyrrole, selenophene, tellurophene, 5-nitro-thiophene, 5-diethylamino-thiophene, 5-[2,2']-bithiophene and fluorene.

14. (previously presented) The trimer of claim 13, having the formula:



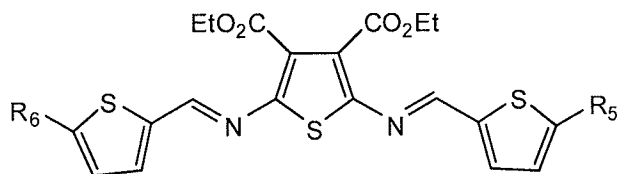
wherein:

R₁ and R₂ are independently selected from the group consisting of H and CO₂R₄;

R₄ is a C₁-C₁₀ alkyl group; and

R_5 and R_6 are independently selected from the group consisting of H, NO_2 , NEt_2 and 2-thiophene.

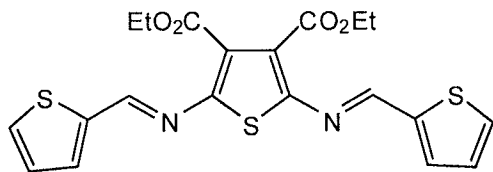
15. (previously presented) The trimer of claim 14, having the formula:



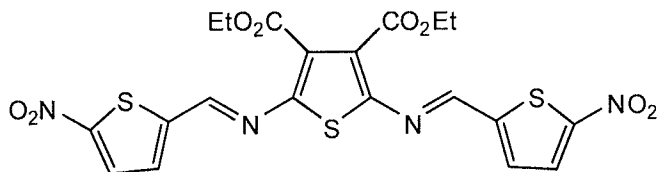
wherein:

R_5 and R_6 are independently selected from the group consisting of H, NO_2 , NEt_2 and 2-thiophene.

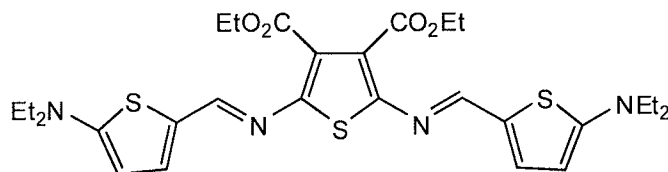
16. (previously presented) The trimer of claim 15, having the formula:



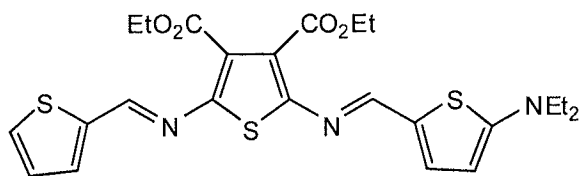
17. (previously presented) The trimer of claim 15, having the formula:



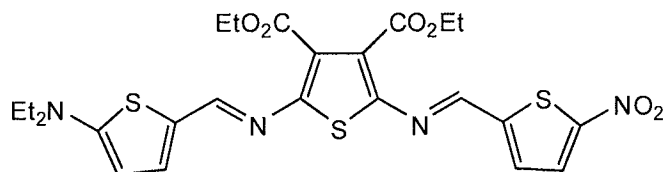
18. (previously presented) The trimer of claim 15, having the formula:



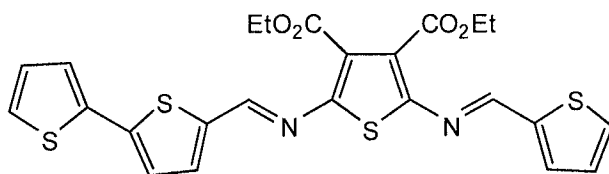
19. (previously presented) The trimer of claim 15, having the formula:



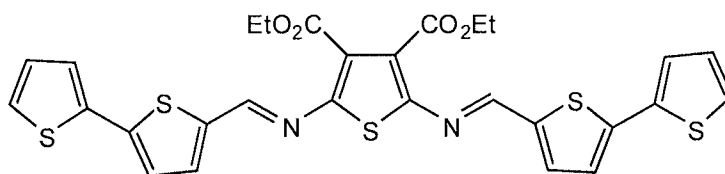
20. (previously presented) The trimer of claim 15, having the formula:



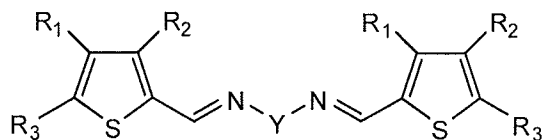
21. (previously presented) The trimer of claim 15, having the formula:



22. (previously presented) The trimer of claim 15, having the formula:



23. (previously presented) A trimer of formula:



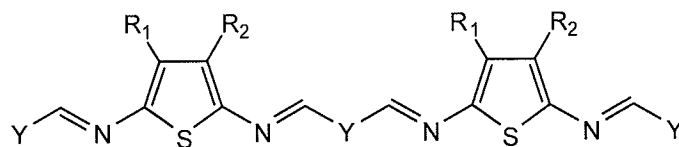
wherein:

R_1 and R_2 are independently selected from the group consisting of H and CO_2R_4 ;

R_4 is a C_1 - C_{10} alkyl group; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene.

24. (previously presented) An oligomer of formula:



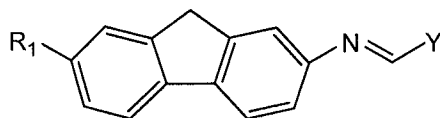
wherein:

R_1 and R_2 are independently selected from the group consisting of H and CO_2R_4 ;

R_4 is a $\text{C}_1\text{-C}_{10}$ alkyl group; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene.

25. (previously presented) A fluorene monomer of the formula:

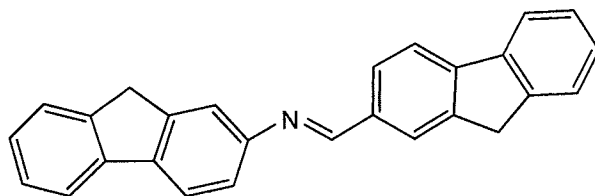


wherein:

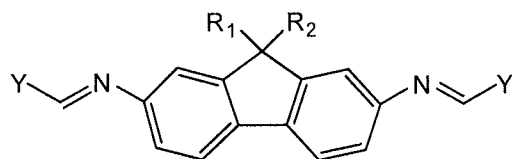
R_1 is selected from the group consisting of H and NH_2 ; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene, fluorene, and 2-aminofluorene.

26. (previously presented) The fluorene monomer of claim 25, having the formula:



27. (previously presented) A fluorene monomer of the formula:

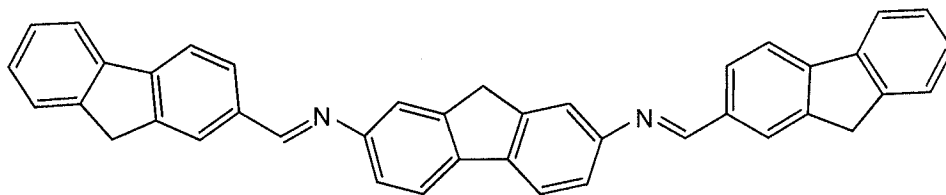


wherein:

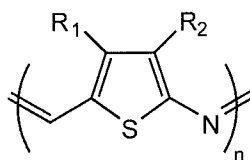
R_1 and R_2 are independently selected from the group consisting of H and C_1 - C_{10} alkyl group; and

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene, fluorene, 2-aminofluorene, and 5-carboxaldehyde-thiophene.

28. (previously presented) The fluorene monomer of claim 27, having the formula:



29. (previously presented) An electrically conducting polymer based on a repeating thiophene monomer as defined in claim 4, the polymer comprising the formula:



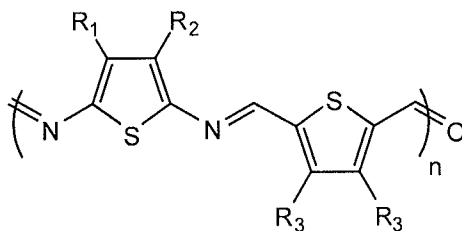
wherein:

R_1 and R_2 are independently selected from the group consisting of H, CN, C_1 - C_{10} alkyl group and CO_2R_4 ;

R_4 is a C_1 - C_{10} alkyl group; and

n is an integer ranging from 4 to 50 000.

30. (previously presented) The electrically conducting polymer of claim 29, wherein said polymer is treated with a doping agent.
31. (previously presented) The electrically conducting polymer of claim 30, wherein said doping agent is selected from the group consisting of a p-type dopant and an n-type dopant.
32. (previously presented) The electrically conducting polymer of claim 31, wherein said p-type dopant is selected from the group consisting of chlorine, bromine, iodine, AlCl_3 , FeCl_3 , GaCl_3 , $\text{CF}_3\text{CO}_2\text{H}$, HCl , H_2SO_4 , $\text{CH}_3\text{SO}_3\text{H}$.
33. (previously presented) The electrically conducting polymer of claim 32, wherein said n-type dopant is selected from the group consisting of sodium naphthalide, SbF_5 , AsF_5 , PF_5 , AgX , NO_2X , and NOX .
34. (previously presented) The electrically conducting polymer of claim 33, wherein X is a non-nucleophilic anion.
35. (previously presented) The electrically conducting polymer of claim 34, wherein the non-nucleophilic anion is selected from the group consisting of BF_4^- , PF_6^- , SbF_6^- , ClO_4^- , sulfonic acid anions and carboxylic acid anions.
36. (previously presented) An electrically conducting polymer of the formula:



wherein:

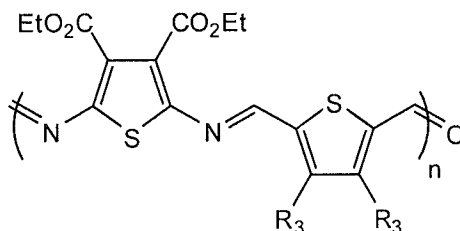
R_1 and R_2 are independently selected from the group consisting of H, CN, $\text{C}_1\text{-C}_{10}$ alkyl group and CO_2R_4 ;

R_3 is selected from the group consisting of H and C_1 - C_{10} alkyl group;

R_4 is a C_1 - C_{10} alkyl group; and

n is an integer ranging from 4 to 50 000.

37. (previously presented) The electrically conducting polymer of claim 36, having the formula:

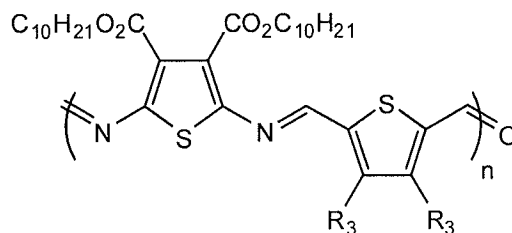


wherein:

R_3 is selected from the group consisting of H and C_1 - C_{10} alkyl group; and

n is an integer ranging from 4 to 50 000.

38. (previously presented) The electrically conducting polymer of claim 36, having the formula:

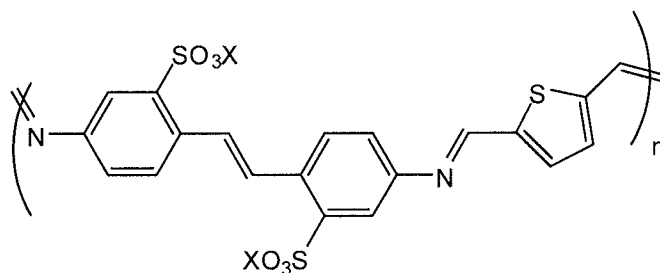


wherein:

R_3 is selected from the group consisting of H and C_1 - C_{10} alkyl group; and

n is an integer ranging from 4 to 50 000.

39. (previously presented) An electrically conducting polymer of the formula:

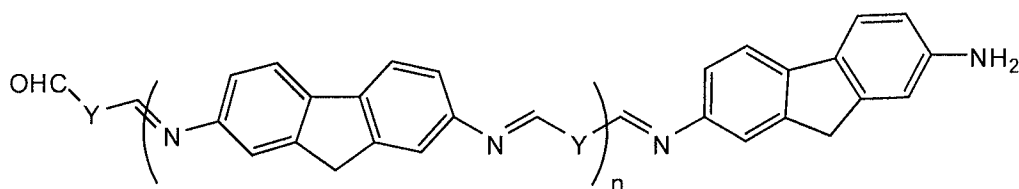


wherein:

X is selected from the group consisting of Na, K and Et₃NH; and

n is an integer ranging from 4 to 50 000.

40. (previously presented) An electrically conducting polymer of the formula:



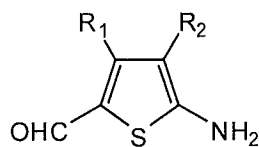
wherein:

Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene, fluorene; and

n is an integer ranging from 4 to 50 000.

41. (previously presented) Use of an electrically conducting polymer as defined in claim 29, in applications selected from the group consisting of organic light emitting diodes (OLEDs), polymer light emitting diodes, conducting wires, thin films and active matrices.
42. (previously presented) Use of an electrically conducting polymer as defined in claim 29, in applications selected from the group consisting of microdisplays, laptop computers, televisions, computer monitors, stereos, cellular telephones, displays, fuel cells, battery storage devices, photovoltaic cells, solar cells, liquid crystal devices, optical devices, sensors and detectors.

43. (previously presented) An organic light emitting diode comprising an electrically conducting polymer as defined in claim 29.
44. (previously presented) A polymer light emitting diode comprising an electrically conducting polymer as defined in claim 29.
45. (previously presented) A molecular wire comprising an electrically conducting polymer as defined in claim 29.
46. (previously presented) A thin film comprising an electrically conducting polymer as defined in claim 29.
47. (previously presented) An active matrix comprising an electrically conducting polymer as defined in claim 29.
48. (previously presented) A method for preparing an electrically conducting polymer as defined in claim 29, comprising polymerizing a thiophene monomer of the formula:

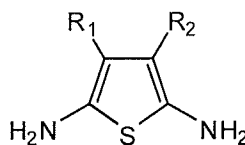


wherein:

R₁ and R₂ are independently selected from the group consisting of H, CN, C₁-C₁₀ alkyl group and CO₂R₄; and

R₄ is a C₁-C₁₀ alkyl group.

49. (previously presented) A method for preparing an electrically conducting polymer as defined in claim 36, comprising reacting a thiophene diamine of the formula:

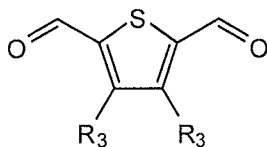


wherein:

R_1 and R_2 are independently selected from the group consisting of H, CN, C_1 - C_{10} alkyl group and CO_2R_4 ; and

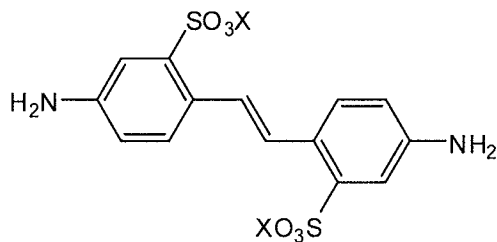
R_4 is a C_1 - C_{10} alkyl group,

with an aromatic dialdehyde of the formula:



wherein R_3 is selected from the group consisting of H and C_1 - C_{10} alkyl group.

50. (previously presented) A method for preparing an electrically conducting polymer as defined in claim 39, comprising reacting an aromatic diamine of the formula:

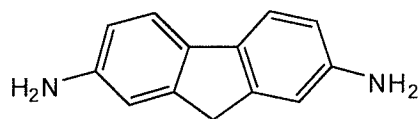


wherein

X is selected from the group consisting of Na, K and Et_3NH ;

with 2,5-thiophene dicarboxaldehyde.

51. (previously presented) A method for preparing an electrically conducting polymer as defined in claim 40, comprising reacting 2,7-diaminofluorene



with an aromatic dialdehyde of the formula:



wherein Y is selected from the group consisting of benzene, pyridine, pyridazine, pyrimidine, pyrazine, thiophene, pyrrole, selenophene, tellurophene and fluorene.